

WHAT IS CLAIMED IS:

1. A cooling unit to cool a heat generating component, comprising:

a heat<sup>24</sup> sink arranged adjacent to said heat generating component;

a heat<sup>25</sup> diffusing member arranged between said heat generating component and said heat sink;

a first heat<sup>56</sup> conducting member interposed between said heat generating component and said heat diffusing member to thermally connect said heat generating component and said heat diffusing member; and

a second heat<sup>57</sup> conducting member interposed between said heat diffusing member and said heat sink to thermally connect said heat diffusing member and said heat sink.

2. The cooling unit according to claim 1, wherein said heat sink has area dimensions greater than said heat generating component.

3. The cooling unit according to claim 1, wherein said heat diffusing member has a thermal conductivity higher than said second heat conducting member and area dimensions greater than said heat generating component.

4. The cooling unit according to claim 1, further including a spring<sup>58</sup> member to urge said heat diffusing member towards said heat generating component.

5. A cooling unit according to claim 1, wherein said first heat conducting member is less thick

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than said second heat conducting member, and said second heat conducting member is displaced in a direction of thickness.

5           6. A cooling unit according to claim 1, wherein  
said heat generating component has a radiation  
surface, and said heat diffusing member has a first  
thermal contact surface facing said radiation surface  
and a second thermal contact surface facing said heat  
sink, said first and second thermal contact surfaces  
10 each having an area larger than said radiation surface.

62 23 11       7. A cooling unit according to claim 6, wherein  
said heat diffusing member is urged toward said  
heat generating component by springs.

15           8. A cooling unit according to claim 1, wherein  
said heat generating component has a plurality of  
corners along an outer periphery, and said heat  
diffusing member has a plurality of engaging sections  
to be engaged with the respective corners, a positional  
relationship of said heat generating component and said  
20 heat diffusing member being defined by mutual  
engagement of said corners and said engaging sections.

25           9. A cooling unit according to claim 8, wherein  
said heat diffusing member has a plurality of  
tongues to be removably hooked to said heat generating  
component.

10. A cooling unit according to claim 1, wherein  
said first heat conducting member has a thermal

conductivity higher than said second heat conducting member.

11. A cooling unit according to claim 1, wherein  
said heat sink has a heat receiving<sup>26</sup> portion held  
5 in contact with said second heat conducting member, and  
a heat exchanging<sup>22</sup> portion thermally connected to said  
heat receiving portion and separated from said heat  
generating component.

12. A cooling unit according to claim 11, further  
10 including a fan<sup>28</sup> that feeds cooling air to at least said  
heat exchanging portion of said heat sink.

13. A cooling unit, comprising:

a semiconductor package having a heat generating  
IC chip;

15 a heat sink<sup>24</sup> arranged adjacent to said  
semiconductor package, said heat sink having area  
dimensions greater than said IC chip;

a heat diffusing<sup>45</sup> member arranged between said  
semiconductor package and said heat sink;

20 a first heat conducting<sup>56</sup> member interposed between  
said IC chip of said semiconductor package and said  
heat diffusing member to thermally connect said IC chip  
and said heat diffusing member;

a second heat conducting<sup>58</sup> member interposed between  
25 said heat diffusing member and said heat sink to  
thermally connect said heat diffusing member and said  
heat sink; and

a gap between said IC chip and said heat diffusing member being narrower than a gap between said heat diffusing member and said heat sink, said heat diffusing member having a thermal conductivity higher than said second heat conducting member and area dimensions greater than said IC chip.

10 14. A cooling unit according to claim 13, wherein said semiconductor package is mounted on a circuit substrate, and said heat diffusing member and said heat sink are respectively made of electrically conductive materials, said heat diffusing member being electrically connected to said circuit substrate by way of said heat sink. A

15 15. A cooling unit according to claim 14, wherein said heat diffusing member is pressed against said IC chip by electrically conductive springs interposed between said heat diffusing member and said heat sink, and said heat diffusing member and said heat sink are electrically connected to each other by way of said  
20 springs.

25 16. A cooling unit according to claim 13, wherein said semiconductor package has a base substrate bearing said IC chip mounted thereon, and said heat diffusing member is rigidly secured to said base substrate.

17. A cooling unit, comprising:

a circuit substrate having a mount surface bearing

a plurality of grounding pads;

an electronic component mounted on said mount surface of said circuit substrate, said electronic component having a heat generating section arranged on a side opposite to said mount surface;

a heat sink arranged adjacent to said electronic component and having area dimensions greater than said heat generating section;

a heat diffusing member arranged between said electronic component and said heat sink and having area dimensions greater than said heat generating section;

a first heat conducting member interposed between said heat generating section of said electronic component and said heat diffusing member to thermally connect said heat generating section and said heat diffusing member;

a second heat conducting member interposed between said heat diffusing member and said heat sink to thermally connect said heat diffusing member and said heat sink; and

a gap between said heat generating section and said heat diffusing member being narrower than a gap between said heat diffusing member and said heat sink, said heat diffusing member being made of an electrically conductive material having a thermal conductivity higher than said second heat conducting member and provided with a plurality of terminal

sections to be respectively connected to the corresponding grounding pads of said circuit substrate.

18. A cooling unit according to claim 17, wherein said heat sink has a plurality of bosses projecting toward said circuit substrate and rigidly secured to said circuit substrate at positions respectively corresponding to said pads, and said terminal sections of said heat diffusing member are pinched respectively between said corresponding pads and front facets of said corresponding bosses.

19. An electronic apparatus, comprising:

a housing containing a heat generating component;  
a heat sink housed in said housing, said heat sink being arranged adjacent to said heat generating component, said heat sink having area dimensions greater than said heat generating component;

a heat diffusing member arranged between said heat generating component and said heat sink;

a first heat conducting member interposed between said heat generating component and said heat diffusing member to thermally connect said heat generating component and said heat diffusing member; and

a second heat conducting member interposed between said heat diffusing member and said heat sink to

thermally connect said heat diffusing member and said heat sink, said heat diffusing member having a thermal

conductivity higher than said second heat conducting

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member and area dimensions greater than said heat generating component.

20. An electronic apparatus according to claim 19, wherein

5 a gap between said heat generating component and said heat diffusing member is narrower than a gap between said heat diffusing member and said heat sink, and said second heat conducting member is displaceable according to the gap between said heat diffusing member and said heat sink.

21. An electronic apparatus according to claim 19, further including a circuit <sup>13</sup>substrate housed in said housing and bearing said heat generating component.

22. An electronic apparatus according to claim 21, wherein

15 said heat diffusing member and said heat sink are respectively made of electrically conductive materials, and said heat diffusing member is electrically connected to said circuit substrate by way of said heat sink.

23. An electronic apparatus according to claim 21, wherein

25 said circuit substrate has a plurality of grounding pads, and said heat diffusing member is provided with a plurality of terminal sections to be respectively connected to said grounding pads.

24. A cooling unit to cool a heat generating

component, comprising:

a heat sink arranged adjacent to said heat generating component;

5 a heat diffusing member arranged between said heat generating component and said heat sink;

a first heat conducting member interposed between said heat generating component and said heat diffusing member to thermally connect said heat generating component and said heat diffusing member; and

10 a second heat conducting member interposed between said heat diffusing member and said heat sink to thermally connect said heat diffusing member and said heat sink, wherein said heat sink has area dimensions greater than said heat diffusing member, and said heat  
15 diffusion member has area dimensions greater than said heat generating component.

25. The cooling unit according to claim 24,  
further including a spring member to urge said heat  
diffusing member towards said heat generating  
20 component.

26. A cooling unit to cool a heat generating component, comprising:

a heat sink arranged adjacent to said heat generating component;

25 a base substrate upon which said heat generating component is affixed, said base substrate having four corners;



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semiconductor package, said base substrate having four corners;

5 providing a heat diffusing member to be arranged between said heat generating component and a heat sink, said heat diffusing member having four engaging sections corresponding to the four corners of said base substrate to allow said base substrate to fit with said heat diffusing member;

10 interposing a first heat conducting member between said heat generating component and said heat diffusing member to thermally connect said heat generating component and said heat diffusing member;

15 fitting the four engaging sections of said heat diffusing member to the four corners of said base substrate; and

interposing a second heat conducting member between said heat diffusing member and said heat sink to thermally connect said heat diffusing member and said heat sink.

20 30. The method according to claim 29, further including providing a spring member to urge said heat diffusing member towards said heat generating component.

25 31. A heat diffusing member, comprising:  
a diffusion plate having a first thermal contact surface to engage a heat generating component and a second thermal contact surface to engage a heat sink;

